Mathematics A

Information about the 2017 examination

The examination will be based on the *Mathematics A Senior External Syllabus 2006*.
It will consist of two papers.

Paper	Perusal/planning time	Working time
One	10 minutes	3 hours
Two	10 minutes	3 hours

Each paper will contain four extended-response questions.

The following syllabus topics will be assessed.

Paper One

- Managing money 1
- Introduction to data and its presentation
- Exploring and understanding data
- Maps and compasses — navigation.

Paper Two

- Managing money 2
- Elements of applied geometry
- Linking two and three dimensions
- Operations research — networks and queuing.

Assessment

Candidates should attempt every question in each paper.

Candidates' responses to questions in each paper will be judged against the syllabus exit criteria:

- *Knowledge and procedures (KP)*
- *Modelling and problem solving (MP)*
- *Communication and justification (CJ).*

For each candidate, a level of achievement will be determined by applying the syllabus standards to an overall assessment of responses across both Paper One and Paper Two.

Formulas

A resource book containing formulas will be provided with each paper. These formulas are attached.

Enquiries

Telephone (07) 3864 0211 or email externalexams@qcaa.qld.edu.au.

Formulas

Circumference of a circle

$C = \pi D$

D = diameter

Area

Circle

$A = \pi r^2$

r = radius of the circle

Triangle

$A = \frac{1}{2}bh$

b = base length

h = perpendicular height

Parallelogram

$A = bh$

b = base length

h = perpendicular height

Trapezium

$A = \frac{1}{2}h(a + b)$

a and b are parallel sides

h = perpendicular height

Sector

$A = \dfrac{\theta}{360} \times \pi r^2$

θ = number of degrees in the central angle

Surface area

Sphere

$A = 4\pi r^2$

Closed cylinder

$A = 2\pi rh + 2\pi r^2$

Volume

r = radius of base

h = perpendicular height

A = base area

Cone

$V = \frac{1}{3}\pi r^2 h$

Sphere

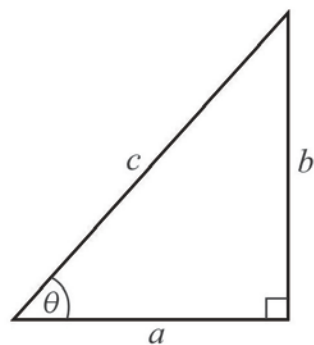$V = \frac{4}{3}\pi r^3$

Cylinder

$V = \pi r^2 h$

Pyramid

$V = \frac{1}{3}Ah$

Prism

$V = Ah$

Trigonometry

$\sin\theta = \dfrac{b}{c}$, $\cos\theta = \dfrac{a}{c}$ and $\tan\theta = \dfrac{b}{a}$

Pythagoras' theorem

$c^2 = a^2 + b^2$

Financial formulas

Simple interest

$I = Prn$

P = initial quantity

r = percentage interest rate per period expressed as a decimal

n = number of periods

Compound interest

$A = P(1 + r)^n$

A = final balance

P = initial quantity

r = percentage interest rate per compounding period expressed as a decimal

n = number of compounding periods

Diminishing value formula

$S = V_0(1 - r)^n$

S = salvage value of an asset after n periods

V_0 = initial value of the asset

r = percentage interest rate per period expressed as a decimal

n = number of periods

Percentage dividend

$$\frac{\text{Dividend per share}}{\text{Face value of share}} \times 100$$

Percentage yield

$$\frac{\text{Dividend per share}}{\text{Market price per share}} \times 100$$

Earth geometry

Great circle distance

Angle difference × 111.2 km

Angle difference × 60 nautical miles

Time

$1°$ longitude difference = 4 minutes time difference

Navigation

1 nautical mile = 1.852 km